CITY OF VAUGHAN

EXTRACT FROM COUNCIL MEETING MINUTES OF JANUARY 26, 2021

Item 8, Report No. 1, of the Committee of the Whole, which was adopted without amendment by the Council of the City of Vaughan on January 26, 2021.

8. HIGHWAY 427 EXPANSION - JOHN LAWRIE STREET LEGAL AGREEMENT AMENDMENT

The Committee of the Whole recommends approval of the recommendation contained in the following report of the Deputy City Manager, Infrastructure Development, dated January 19, 2021:

Recommendations

1. That the Mayor and the City Clerk be authorized to enter into an amending agreement to amend the Agreement dated February 3, 2017, between the Ministry of Transportation of Ontario and the City, in accordance with the terms and conditions as outlined within this report from the Deputy City Manager, Infrastructure Development, in a form satisfactory to Legal Services; and
2. That all necessary by-laws be enacted.

Committee of the Whole (1) Report

DATE: Tuesday, January 19, 2021 **WARD(S):** 2

TITLE: HIGHWAY 427 EXPANSION - JOHN LAWRIE STREET LEGAL AGREEMENT AMENDMENT

FROM:
Nick Spensieri, Deputy City Manager, Infrastructure Development

ACTION: DECISION

Purpose

To seek Council authorization to amend the agreement between the Ministry of Transportation and the City to facilitate construction cost revisions for the modified design of the future John Lawrie Street underpass at Highway 427 crossing, in Planning Block 59.

Report Highlights

- John Lawrie Street (formerly known as Street 'A') Environmental Assessment Study (EA) was approved in 2015 and included an underpass at the crossing of future Highway 427
- City and MTO entered into an agreement in 2017 which included the construction cost for the John Lawrie Street bridges by MTO as part of the Highway 427 Extension, including long-term maintenance costs
- As a result of design changes, the capital cost estimate for the two crossing structures was reduced from $8.9 million for a 42m span, to $6.8 million for a 27.6m span
- Construction of the Highway 427 extension from Highway 7 to Major Mackenzie Drive is set for substantial completion shortly

Recommendations

1. That the Mayor and the City Clerk be authorized to enter into an amending agreement to amend the Agreement dated February 3, 2017, between the Ministry of Transportation of Ontario and the City, in accordance with the terms and conditions as outlined within this report from the Deputy City Manager, Infrastructure Development, in a form satisfactory to Legal Services; and
2. That all necessary by-laws be enacted.

Background

Highway 427 Extension Transportation Corridor EA was approved in 2010

In October 2010, the Ministry of Transportation of Ontario (MTO) received approval of the Environmental Assessment for the extension of Highway 427 from its then terminus at Highway 7 to Major Mackenzie Drive West. The approved EA recommended a 6.6-km extension and the construction of three new interchanges at Langstaff Road, Rutherford Road and Major Mackenzie Drive West as well as protection for a dedicated transitway along the west side of the extension and three transitway stations.

West Vaughan Employment Secondary Plan was approved in 2014

In 2014, the Ontario Municipal Board (OMB) approved the West Vaughan Employment Secondary Plan (WVESP), which established the framework for employment growth on the lands generally west of Highway 27, including the Planning Block 59. The WVESP identifies a network of collector roads that are needed to support the planned employment growth, and to provide connectivity in the City's transportation system. This planned road network includes proposed east-west collector road (John Lawrie Street, formerly known as Street "A") that extends from the existing intersection of Trade Valley Drive and Huntington Road through Block 59 to the intersection of Martin Grove Road and Highway 27.

The John Lawrie Street - Highway 427 crossing structures were constructed in conjunction with the Highway 427 Extension project

In 2014, the MTO commenced the design process for the extension of Highway 427 from the current terminus at Highway 7 to Major Mackenzie Drive West. For constructability reasons it was identified that the John Lawrie Street crossing structures at the future Highway 427 should be constructed in conjunction with the highway project. As such, John Lawrie Street was directly impacted by the Highway 427 extension. The MTO staff advised that they could consider including the John Lawrie Street crossing structures in the highway construction project if the City could secure all the necessary approvals, property and funding by early summer 2015.

John Lawrie Street Environmental Assessment was approved in summer 2015

Shortly after the WVESP was approved by the OMB, the Block 59 Landowners submitted a Block Plan including supporting Master Environmental Servicing Plan to facilitate necessary review by staff and external agencies. Given the potential social, environmental and economic impacts related to the construction of this collector road, it was identified early in the Block Plan process that a Municipal Class Environmental Assessment was required to ascertain the preferred design and alignment of John Lawrie Street through the block.

The Environmental Assessment study identified three underpass crossing structures at the future Highway 427 (one northbound, one southbound and the future transitway), with a bridge a span of 42 metres

In May 2014, the City and the Block 59 Landowners Group, as co-proponents initiated the John Lawrie Street (formerly known as Street 'A') Schedule 'C' Municipal Class EA, in conjunction with the planning process for Block 59. The EA study identified three (3) underpass crossing structures at the future Highway 427 (one northbound, one southbound and the future transitway), with a bridge span of 42 metres (see General Arrangement drawing in Attachment 1) to make place for a 26-m right of way with two lanes in each direction, sidewalks and side slopes. A 350-m section of the road from Highway 27/Martin Grove Road westwards was planned in conjunction with the development approvals for the Fed Ex Distribution Centre and built in 2016.

In June 2015, the City and the Block 59 Landowner Group filed the EA and confirmed the preferred alignment for John Lawrie Street (see Attachment 2). The Environmental Assessment study for the John Lawrie Street was approved in Summer 2015.

An agreement between the MTO and the City with regards to the capital cost of the John Lawrie bridge was signed in February 2017

Following the John Lawrie Street EA approval, the City made an official request to the MTO in October 2015 to include the crossing structures in its upcoming Request for Proposal (RFP) for the Highway 427 Extension Design-Build-Finance Maintain (DBFM) undertaking. In March 2016, the MTO and Infrastructure Ontario (IO) released the RFP which included the John Lawrie – Highway 427 crossing structures.

An agreement between the City and MTO with regards to the payment of capital cost and long-term rehabilitation and maintenance costs of the John Lawrie Street – Highway 427 crossing structures was executed in February 2017.

The construction cost for the three crossing structures at John Lawrie was estimated at $10.9 million, inclusive of a 15% contingency and a 15% allowance for engineering fees. This cost included the construction of the transitway structure. Factoring in non-

refundable HST and the administration recovery, the total capital cost equated to $11.4 million. However, the City was informed by MTO that there were no plans for the construction of the transitway structure and payment of this structure would not be required at the time, resulting in a reduction of $2.5 million to the overall cost estimate of $11.4 million to $8.9 million, all fees included.

The agreement included provisions for the payment of long-term maintenance costs to the MTO

These fees did not include long-term maintenance costs for the lifecycle of the underpass, for which the MTO was to prepare a draft policy by April 1, 2018, setting out the Ministry's position concerning the allocation of long-term maintenance and rehabilitation costs attributable to infrastructure, including grade separations such as the overpasses/underpasses, constructed by municipalities within provincial highways.

After consulting with the stakeholders and, prior to April 1, 2020, the Ministry was to finalize the Draft Policy in a form satisfactory to the Ministry in its sole discretion (the "Final Policy") ensuring that it is duly authorized, and issue a copy to the City, failing which the City shall not be responsible for the cost of long-term maintenance and rehabilitation of the Overpasses.

In March 2017, IO and MTO announced that the Highway 427 Expansion project had been awarded to the "LINK 427" Consortium

In March 2017, IO and MTO announced that the DBFM Alternative Financing & Procurement (AFP) for the Highway 427 Expansion project had been awarded to the "LINK 427" Consortium. The LINK 427 Consortium includes a team of developers, builders, designers and a contractor dedicated to maintenance.

Previous Reports/Authority

Previous reports relating to Highway 427 Extension related matters can be found at the following links:

January 28, 2015, Finance, Administration and Audit Committee (Item 1, Communication C3), Street "A" – Highway 427 Crossing (Block 59)

February 17, 2015, Finance, Administration and Audit Committee (Item 7, Report No. 5), Street "A" – Highway 427 Crossing (Block 59)

June 23, 2015, Priorities and Key Initiatives Committee (Item 1, Report No. 3), Highway 427 Extension Update report

June 28, 2016 Committee of the Whole (Item 16, Report No. 27), Highway 427 Expansion Project Update,

June 27, 2017, Committee of the Whole- Working Session (Item 2, Report 24), Highway 427 Expansion Project Update

Analysis and Options

As part of the work undertaken by LINK 427 since the commencement of the DBFM phase (Summer 2017), detail design drawings showing the future crossing structures and the underpass were circulated to City staff between early 2018 and late 2019 for review and feedback.

Changes to the highway bridge structures resulted in a reduction of the bridge span from 42 m, as originally planned in the Street 'A' EA to 27.6 m

In October 2018, LINK 427 advised the City staff that during design development, it had utilized some design optimizations which resulted in refinements to the preliminary design of the structures contemplated in the City of Vaughan's 2015 Environmental Study Report (ESR). LINK 427 elected to utilize an integral abutment system, instead of the semi-integral abutment system depicted on the preliminary design.

Another element which impacted the design was the requirement from Hydro One Networks Inc. (HONI) to maintain an overhead vertical clearance of 15.7 m between overhead conductors and structures. This resulted in a reduced profile of the Highway 427 underneath the HONI corridor. Since the John Lawrie Street roadway elevation had been kept consistent, and the overpass profile of the Highway 427 had been reduced, LINK 427 was required to reduce the girder depth at the superstructure. LINK 427 believed that this would have been a design change necessary in the preliminary ESR design as well.

These changes resulted in a reduction of the bridge span from 42 m, as originally planned in the Street 'A' EA to 27.6 m. These refinements still provided the required configuration of lanes, boulevards, and elevations for the proposed Street A. However, the proposed side slopes would have to be replaced by a retaining wall system. City staff required further information on the reduced bridge span, its implications on the constructability of the future roadway underpass (from a technical and financial perspective) and on the drainage system.

Following a series of meetings and discussions with the MTO, LINK 427 and Cole Engineering (Block 59 Landowners Group's representative) between late 2018 and late 2019, the City agreed with the modified design and reduced span, as it received guarantees from LINK 427 that the proposed modified design would neither result in any increased effort by the City or developers for construction, nor in any increased construction or maintenance costs (mainly life cycle costs). The 100% General

Arrangement drawings for the northbound and southbound structures submitted by LINK 427 in March 2020 are shown in Attachment 3.

The revised total construction cost for the two structures, excluding transitway structure, will be approximately $6.8 million

In October 2020, the MTO submitted the revised cost estimates for the construction of the overpass. Based on updated estimates from the MTO, the revised total construction cost for the two structures, excluding transitway structure and including post-highway construction excavation costs, will be approximately $6.8 million, inclusive of a 15% allowance for engineering costs, non-refundable HST and administrative fees, representing a significant reduction from the initial cost estimate of $8.9 million.

Additionally, the MTO failed to finalize its policy regarding long-term maintenance and rehabilitation costs attributable to infrastructure, including grade separations constructed by municipalities within provincial highways, such as the John Lawrie underpass, by April of 2020. As a result, the City of Vaughan will no longer be responsible for the cost of long-term maintenance and rehabilitation of the underpass.

Financial Impact

Based on updated estimates from MTO, the total construction for the two structures, excluding transitway structure, and including excavation, will be approximately $6.8 million, inclusive of a 15% allowance for engineering costs, 1.76% HST and 3% administrative fee, representing a significant reduction from the initial cost estimate of $8.9 million.

In addition, the City is no longer responsible for the cost of long-term maintenance and rehabilitation of the underpass, as the MTO failed to finalize its policy regarding long-term maintenance and rehabilitation costs attributable to infrastructure, including grade separations such as the John Lawrie underpass.

Broader Regional Impacts/Considerations

York Region's Official Plan (2010) supports the implementation of mid-block collector roads as the presence of this infrastructure prioritizes the development of this area for employment uses. The York Region policy is to fund a one third share for midblock collector road crossings of 400-series highways, as these crossings ensure there is much needed permeability across freeways.

Capital budget for the John Lawrie crossing at Highway 427 is included in the 2020 Budget Ten-Year Gross Expenditures for the period from 2020 to 2023.

Conclusion

Substantial completion of the Highway 427 extension to Major Mackenzie Drive is scheduled to take place shortly, including the two crossing structures over future John

Lawrie Street in Block 59, as per the initial agreement between the City of Vaughan and the MTO signed in early 2017.

As the designs for the crossing structures were altered from the approved EA during the design-build phase of the Highway 427, cost estimates for the two structures have been updated and decreased from $8.9 million to approximately $6.8 million, and the City of Vaughan is no longer responsible for the cost of long-term maintenance and rehabilitation for the future underpass.

As such, the agreement executed by the City of Vaughan and the Ministry of Transportation in February 2017 shall be amended to reflect the reduced construction cost of the highway crossings.

For more information, please contact Vince Musacchio, Director of Infrastructure Planning and Corporate Asset Management, ext. 8311

Attachments

1. Street 'A' EA – General Arrangement drawings (Northbound and Southbound)
2. Street 'A' EA – Preferred Alignment
3. John Lawrie overpass – General Arrangement drawings (Northbound and Southbound)

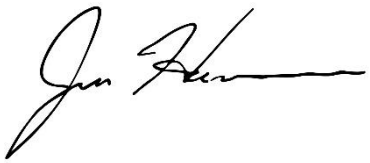
Prepared by

Mani Shahrokni, Project Manager, Transportation Planning, ext. 8163
Selma Hubjer, Manager, Transportation Planning, ext. 8674

Approved by

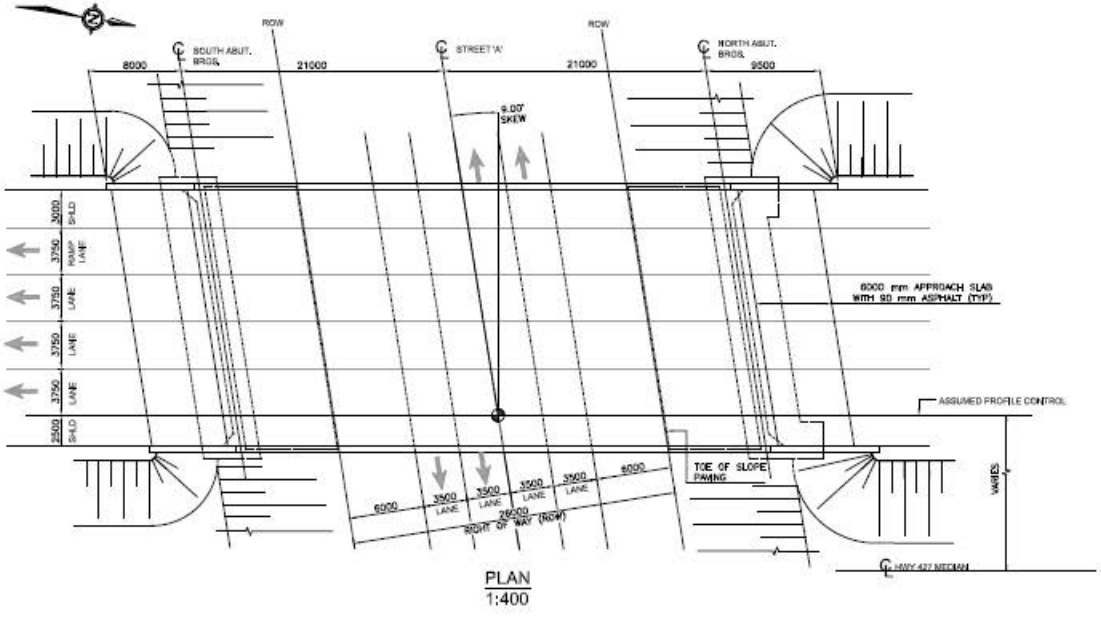
Nick Spensieri,
Deputy City Manager,
Infrastructure Development

Reviewed by



Jim Harnum,
City Manager

ATTACHMENT 1



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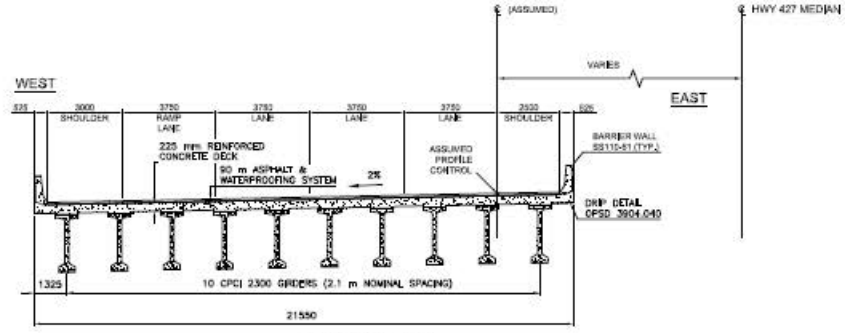

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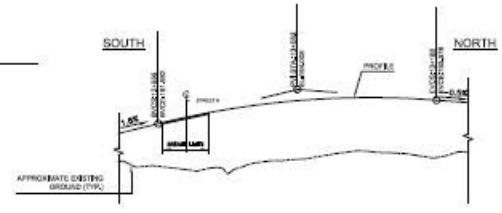
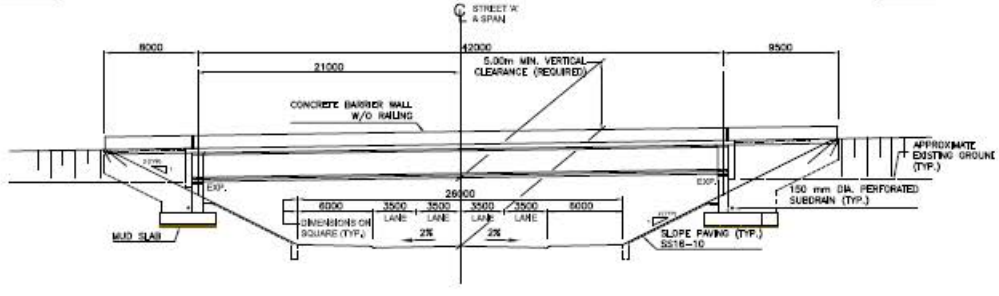
SOUTH NORTH



PROPOSED PROFILE OF HWY. 427 SOUTHBOUND
N.T.S.

NOTE: PROFILES SUBJECT TO REVISION DURING FINAL DESIGN

SOUTH NORTH



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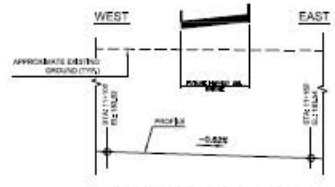

PROPOSED PROFILE OF STREET A
N.T.S.

THIS DRAWING NOT TO BE SCALED

NOTES:

- THIS DRAWING SHALL READ IN CONJUNCTION WITH ROADWAY DRAWINGS FOR THIS PROJECT.
- DESIGN SHALL BE IN ACCORDANCE WITH CHBDC CAN/CSA-S6-14 AND MTO STRUCTURAL MANUAL.
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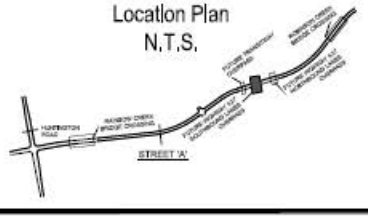
- SEMI-INTEGRAL ABUTMENTS ARE ASSUMED FOR THIS BRIDGE. DETAIL DESIGN MAY ALSO CONSIDER AN INTEGRAL ABUTMENT SYSTEM.

LIST OF ABBREVIATIONS:

ABUT.	ABUTMENT
BRGS.	BEARINGS
BVCS	BEGINNING VERTICAL CURVE STATION
BVCE	BEGINNING VERTICAL CURVE ELEVATION
EVCS	END VERTICAL CURVE STATION
EVCE	END VERTICAL CURVE ELEVATION
EXP.	EXPANSION BEARINGS
NBL	NORTHBOUND LANE
SBL	SOUTHBOUND LANE
PVI	POINT OF VERTICAL INTERSECTION
SHLD	SHOULDER

Location Plan
N.T.S.



PRELIMINARY GENERAL ARANGEMENT

HWY 427 SOUTHBOUND OVERPASS OVER STREET 'A'

BLOCK 59 - CITY OF VAUGHAN

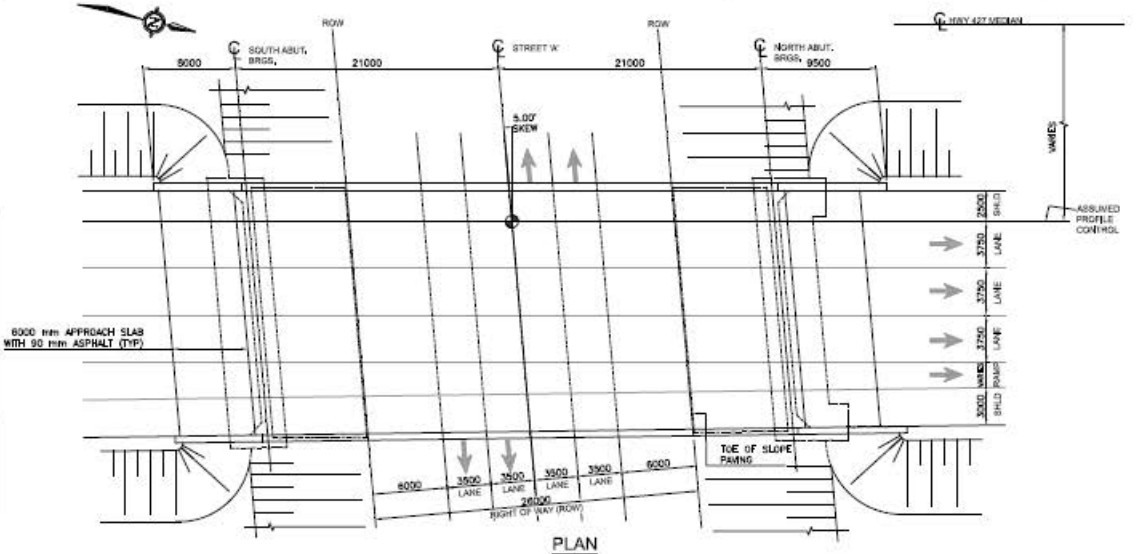
BT ENGINEERING BTE | COLE ENGINEERING

SCALE AS NOTED

DWG NO. 2015-22-3 REV.1

DATE: JULY 2015

FILEPATH: Y:\Eng Projects\2015 Proj\BTEng15-022 - Cole Eng GA Drawings Vaughan Block 59 Street A\005-Drawings\BTE GA\GA - V3.dwg | Jul 22, 2015 - 11:23am



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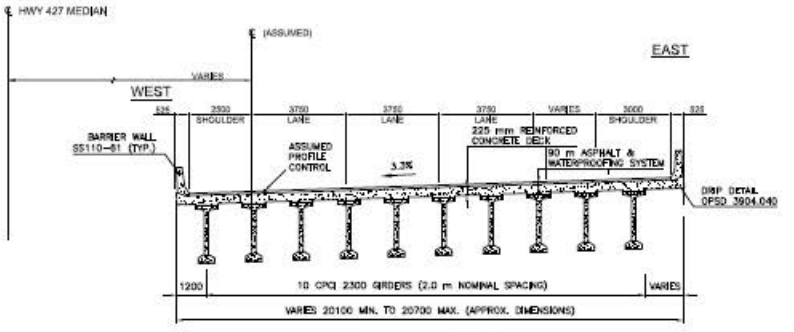

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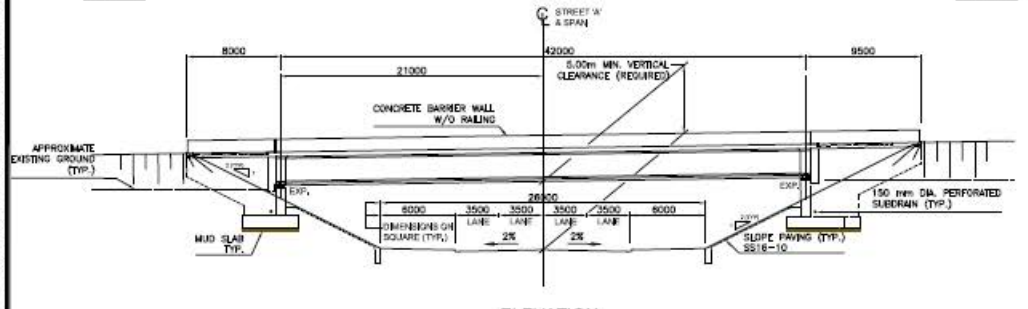
SOUTH NORTH



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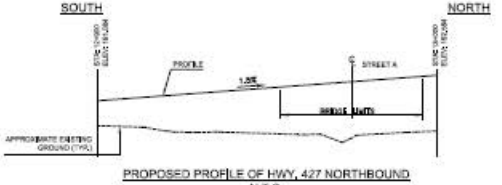

PROPOSED PROFILE OF HWY. 427 NORTHBOUND
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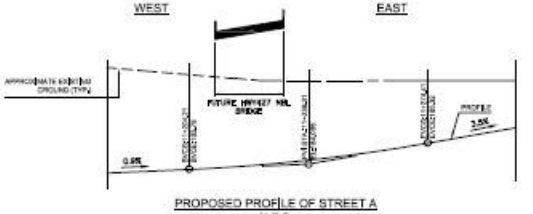
NOTE: PROFILES SUBJECT TO REVISION DURING FINAL DESIGN



PROPOSED PROFILE OF STREET A
N.T.S.

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LIST OF ABBREVIATIONS:

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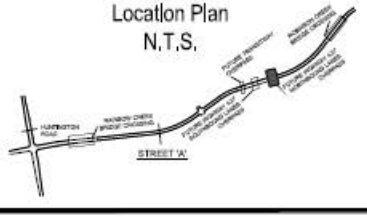
EXP.	EXPANSION BEARINGS
NBL	NORTHBOUND LANE
SBL	SOUTHBOUND LANE
PVI	POINT OF VERTICAL INTERSECTION
SHLD	SHOULDER

THIS DRAWING NOT TO BE SCALED

Location Plan
N.T.S.



PRELIMINARY GENERAL ARANGEMENT
HWY 427 NORTHBOUND OVERPASS OVER STREET 'A'

BLOCK 59 - CITY OF VAUGHAN

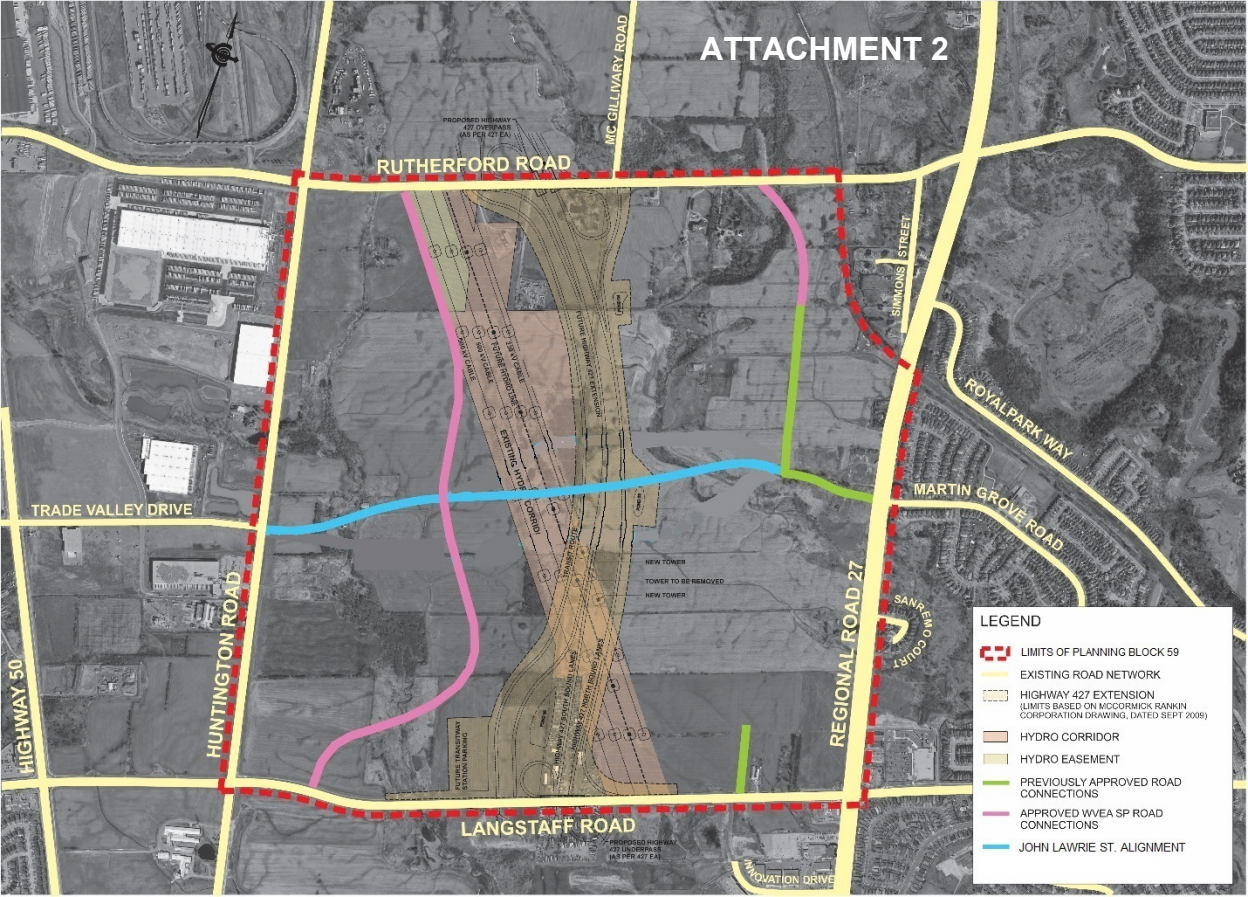
BT ENGINEERING BTE COLE ENGINEERING

SCALE
AS NOTED

DWG NO. 2015-22-1 REV.1

DATE: JULY 2015

ATTACHMENT 2



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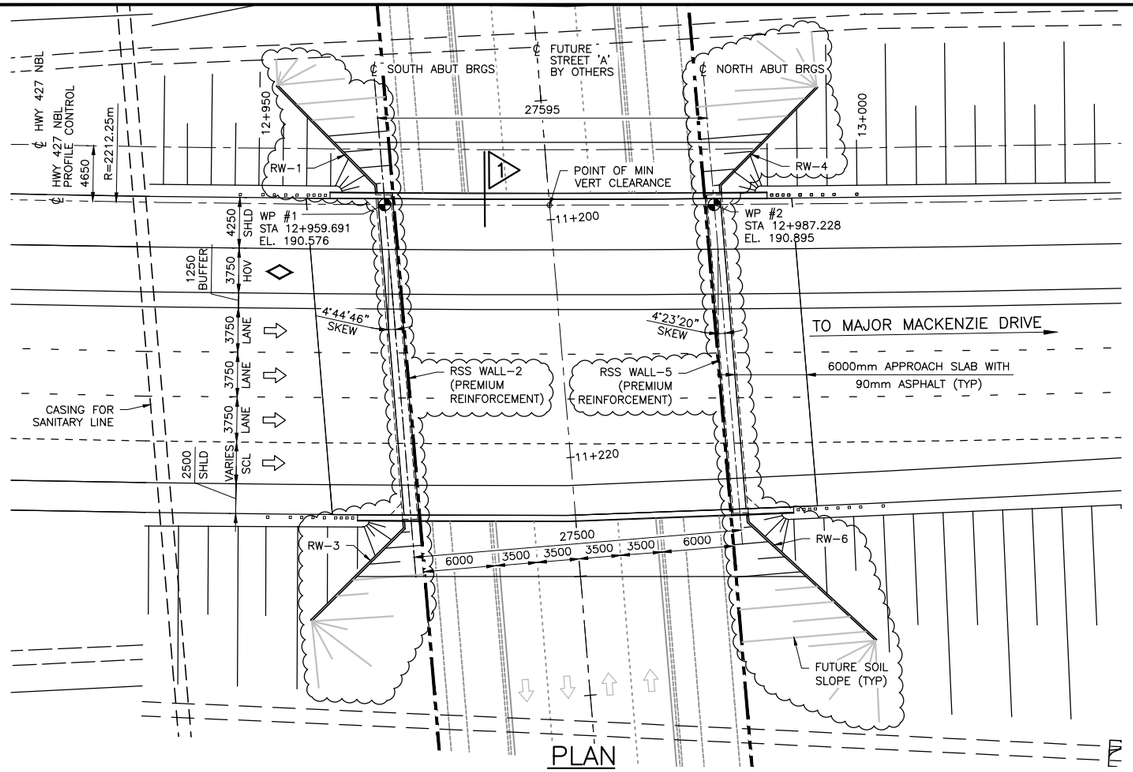

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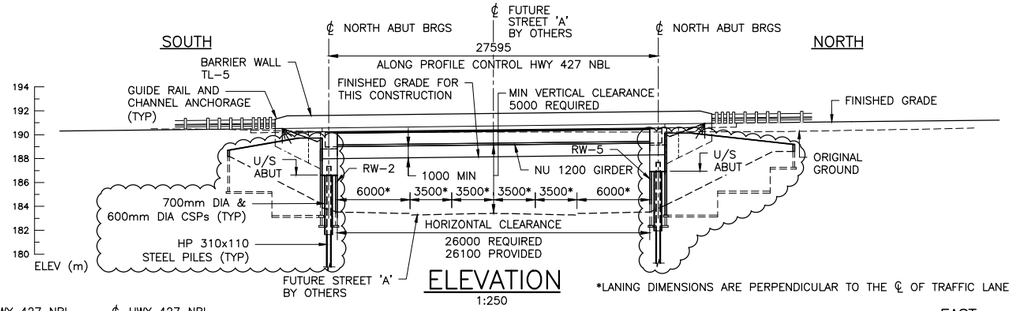

ELEVATION
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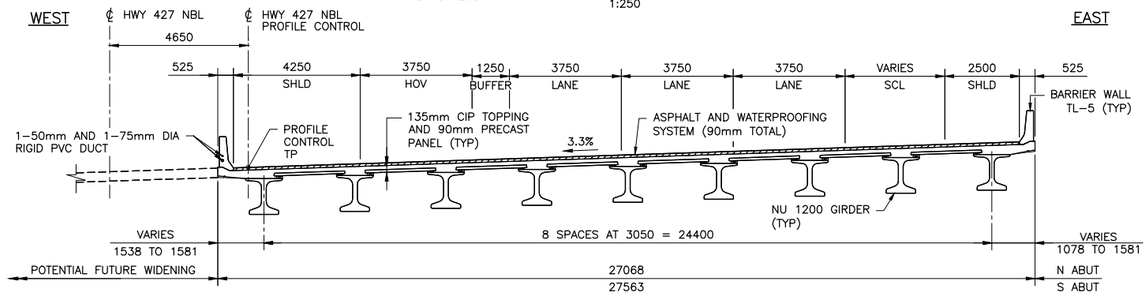
*LANING DIMENSIONS ARE PERPENDICULAR TO THE ℄ OF TRAFFIC LANE



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1:100

APPLICABLE STANDARD DRAWINGS:

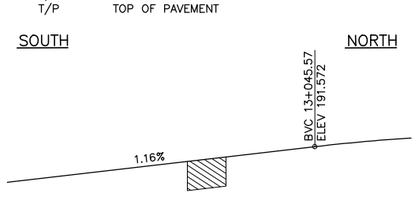
OPSD 3000.100	FOUNDATION PILES – STEEL H-PILE DRIVING SHOE
OPSD 3101.150	WALLS – ABUTMENT, BACKFILL MINIMUM GRANULAR REQUIREMENTS
OPSD 3370.100	DECK, WATERPROOFING HOT APPLIED ASPHALT MEMBRANE WITH PROTECTION BOARD
OPSD 3370.101	DECK, WATERPROOFING HOT APPLIED ASPHALT MEMBRANE AT ACTIVE CRACKS GREATER THAN 2mm WIDE AND CONSTRUCTION JOINTS
OPSD 3419.100	BARRIERS AND RAILINGS – STEEL GUIDE RAIL AND CHANNEL ANCHORAGE
OPSD 3941.200	FIGURES IN CONCRETE – SITE NUMBER AND DATE LAYOUT
OPSD 3950.100	JOINTS, CONCRETE EXPANSION AND CONSTRUCTION ON STRUCTURE
OPSD 3329.100	DECK, REINFORCEMENT, SUPPORTS FOR REINFORCING STEEL FOR SLAB DEPTHS 300 mm OR LESS

LIST OF DRAWINGS:

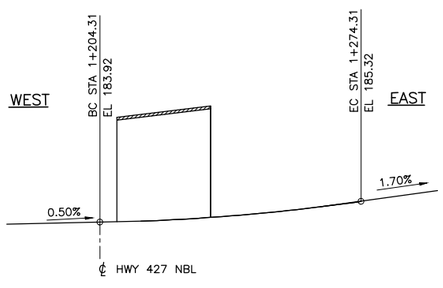
500	GENERAL ARRANGEMENT
501	BOREHOLE LOCATIONS AND SOIL STRATA
502	FOUNDATION LAYOUT
~~503~~	~~FOUNDATION DETAILS~~
503	NORTH ABUTMENT DETAILS AND REINFORCEMENT
504	SOUTH ABUTMENT DETAILS AND REINFORCEMENT
505	WINGWALLS
506	RETAINED SOIL SYSTEM WALL LAYOUT
507	PRESTRESSED NU GIRDERS AND BEARINGS (NU 1200)
508	PRESTRESSED NU GIRDER – DETAILS
509	DECK LAYOUT & SCREED ELEVATIONS
510	PRECAST DECK PANEL LAYOUT
511	PRECAST DECK PANELS FOR CONCRETE GIRDERS – DETAIL I
512	PRECAST DECK PANELS FOR CONCRETE GIRDERS – DETAIL II
513	DECK REINFORCEMENT
514	BARRIER WALL W/O RAILING, TL-5 (GFRP REBAR WITH ANCHOR HEAD)
515	6000 mm APPROACH SLABS
516	STANDARD AND MISCELLANEOUS DETAILS
517	ELECTRICAL EMBEDDED WORK
518	PILE DRIVING CONTROL

LIST OF ABBREVIATIONS:

WP	WORKING POINT
CIP	CAST IN PLACE
U/S	UNDER SIDE
P/C	PROFILE CONTROL
T/P	TOP OF PAVEMENT



PROFILE OF HWY 427 NBL
NTS



PROFILE OF STREET 'A'
NTS

GENERAL NOTES:

1. DESIGN STANDARDS AND CODES:
   - SCHEDULE 15-1 AND SCHEDULE 15-2: PROJECT AGREEMENT
   - DESIGN CODE: CAN/CSA-S6-14
   - MINISTRY OF TRANSPORTATION OF ONTARIO STRUCTURAL MANUAL
   - ONTARIO PROVINCIAL STANDARD SPECIFICATIONS (OPSS)
2. LIVE LOAD: CL-625-ONT.
3. CLASS OF CONCRETE

PRECAST GIRDERS	60 MPa (HPC)
PRECAST DECK PANELS	40 MPa
~~CONCRETE FILLER CAISSON~~	~~7 MPa~~
REMAINDER	30 MPa

4. CLEAR COVER TO REINFORCING STEEL

FOOTINGS AND CAISSONS	100 ± 25
DECK	
TOP	70 ± 20
BOTTOM	40 ± 10
REMAINDER UNLESS OTHERWISE NOTED	70 ± 20

5. REINFORCING STEEL

   REINFORCING STEEL SHALL BE GRADE 400W UNLESS OTHERWISE SPECIFIED.

   BAR MARKS WITH PREFIX 'S' DEONTE STAINLESS STEEL BARS.

   STAINLESS REINFORCING STEEL SHALL BE TYPE 316 LN OR DUPLEX 2205 AND HAVE A MINIMUM YIELD STRENGTH OF 500 MPa, UNLESS OTHERWISE SPECIFIED.

   UNLESS SHOWN OTHERWISE, TENSION LAP SPLICES SHALL BE CLASS B.

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   GLASS FIBRE REINFORCED POLYMER (GFRP) REINFORCING BARS SHALL BE GRADE I, GRADE II OR GRADE III AS SPECIFIED IN THE CONTRACT DOCUMENTS.

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9. RETAINED SOIL SYSTEM (RSS) SHALL HAVE THE FOLLOWING ATTRIBUTES:

APPLICATION:	FALSE ABUTMENT, WALL/SLOPE
PERFORMANCE:	HIGH
APPEARANCE:	HIGH

CONSTRUCTION NOTES:

1. THE CONTRACTOR SHALL ESTABLISH THE BEARING SEAT ELEVATIONS BY DEDUCTING THE ACTUAL BEARING THICKNESSES FROM THE TOP OF BEARING ELEVATIONS. IF THE ACTUAL BEARING THICKNESSES ARE DIFFERENT FROM THOSE GIVEN WITH THE BEARING DESIGN DATA, THE CONTRACTOR SHALL ADJUST THE REINFORCING STEEL TO SUIT.
2. BACKFILL SHALL NOT BE PLACED BEHIND THE ABUTMENTS UNTIL THE DECK SLAB IS IN PLACE AND HAS REACHED 70% OF ITS DESIGN STRENGTH.
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5. ALL EXPOSED EDGES TO RECEIVE A 20x20 CHAMFER.
6. ALL GIRDERS SHALL BE BRACED INDIVIDUALLY BY ATTACHING EACH END TO THE RESPECTIVE SUB-STRUCTURE ELEMENT IMMEDIATELY UPON ERECTION.

LEGEND:

- BOREHOLE
- ROCK PROTECTION AND MEANDER LIMIT HATCH
- PRECAST CONCRETE PANEL
- NEW ASPHALT AND WATERPROOFING

NO.	DATE	REVISIONS	BY	CHK	LEAD DISC.	PROJ. MAN.
B	20/02/28	STRUCTURE TYPE REVISED – 100% SUBMISSION TO CA	T.G	H.O.A	T.O.	P.B.
A	19/11/12	100% SUBMISSION TO CA	Z.L.	H.O.A	T.O.	P.B.

NOT FOR CONSTRUCTION
PROFESSIONAL ENGINEER
LICENCE
H. AZIMI
100166369
2020-02-28
PROVINCE OF ONTARIO

NOT FOR CONSTRUCTION
PROFESSIONAL ENGINEER
LICENCE
Q.LIU
100513507
2020-02-28
PROVINCE OF ONTARIO

CONSULTANT

DESIGNED	TOM GUIOT	T.G	20/02/28
DRAWN	JENNIFER MIEDEMA	J.M.	20/02/28
CHECKED	HOSSEIN AZIMI	H.O.A	20/02/28
APPROVED LEAD ENG.	TATIANA OJALA	T.O	20/02/28
APPROVED PROJ. MANAGER	PETER BAMFORTH	P.B	20/02/28
	NAME (PRINT)	INIT.	DATE

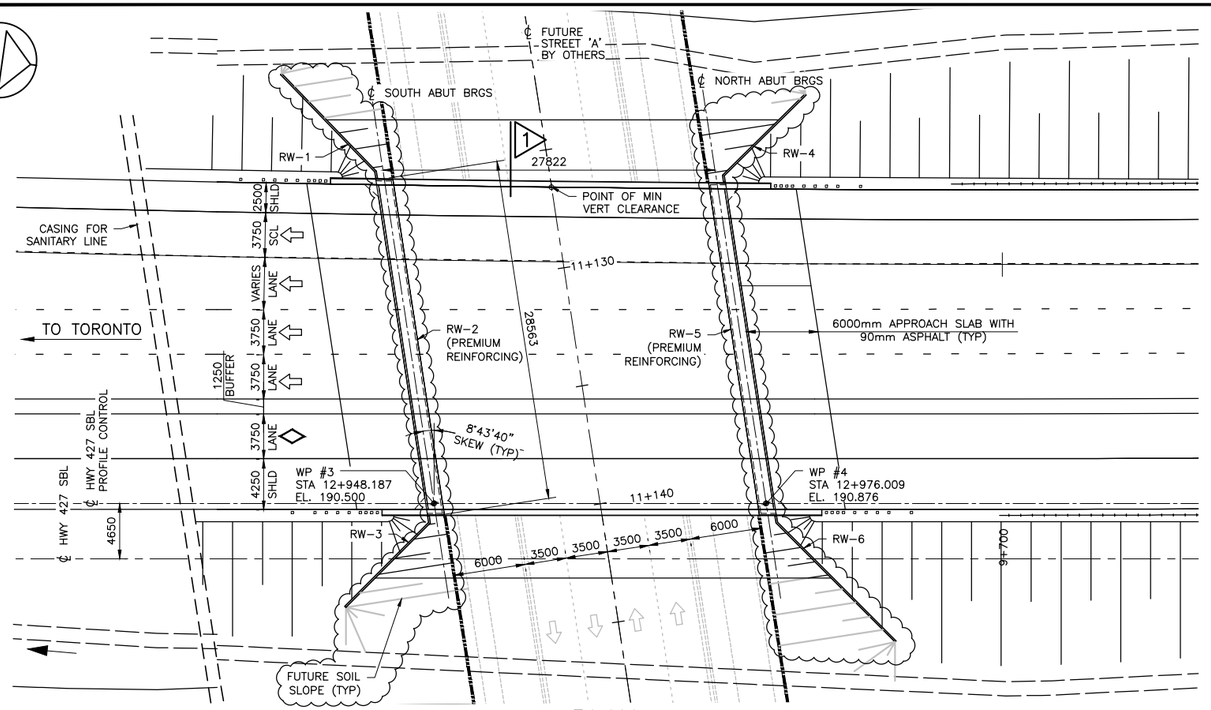
Ontario

link427
LOCAL | INTEGRATED | NEIGHBOURLY | KNOWLEDGEABLE

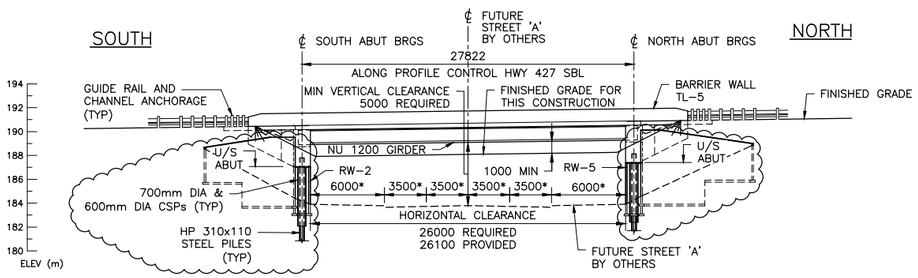
TITLE
HWY 427 EXPANSION
HWY 427 NBL OVER STREET 'A'
SITE 37X-2431/B1

GENERAL ARRANGEMENT

PROJECT ID.	STAGE INDENTIFIER	DESIGN PACKAGE NUMBER	DISCIPLINE	STRUCTURE NUMBER	DOCUMENT TYPE	DRAWING NUMBER	REVISION NUMBER
H427-D	H	7	STR	B14A	DWG	500	B

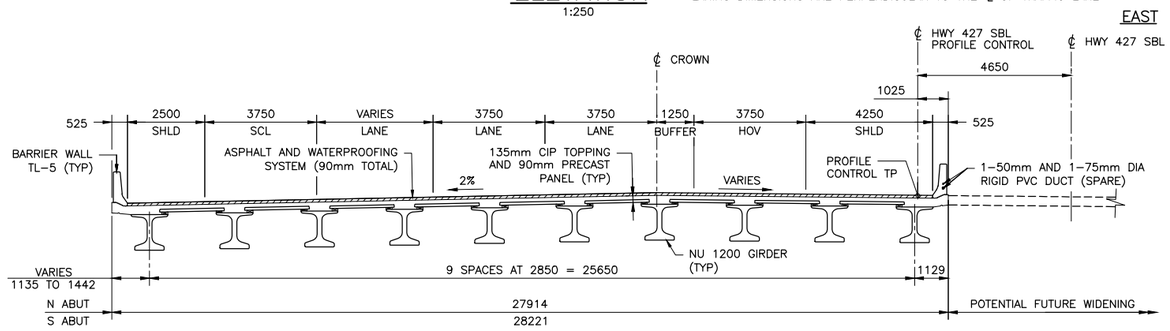


PLAN
1:250



ELEVATION
1:250

* LANING DIMENSIONS ARE PERPENDICULAR TO THE ℄ OF TRAFFIC LANE



1:100

APPLICABLE STANDARD DRAWINGS:

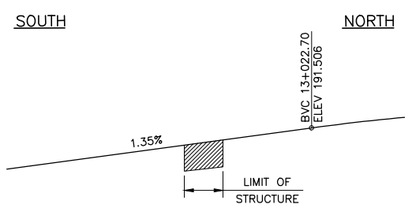
OPSD 3000.100	FOUNDATION PILES – STEEL H-PILE DRIVING SHOE
OPSD 3101.150	WALLS – ABUTMENT, BACKFILL MINIMUM GRANULAR REQUIREMENTS
OPSD 3370.100	DECK, WATERPROOFING HOT APPLIED ASPHALT MEMBRANE WITH PROTECTION BOARD
OPSD 3370.101	DECK, WATERPROOFING HOT APPLIED ASPHALT MEMBRANE AT ACTIVE CRACKS GREATER THAN 2mm WIDE AND CONSTRUCTION JOINTS
OPSD 3419.100	BARRIERS AND RAILINGS – STEEL GUIDE RAIL AND CHANNEL ANCHORAGE
OPSD 3941.200	FIGURES IN CONCRETE – SITE NUMBER AND DATE LAYOUT
OPSD 3950.100	JOINTS, CONCRETE EXPANSION AND CONSTRUCTION ON STRUCTURE
OPSD 3329.100	DECK, REINFORCEMENT, SUPPORTS FOR REINFORCING STEEL FOR SLAB DEPTHS 300 mm OR LESS

LIST OF DRAWINGS:

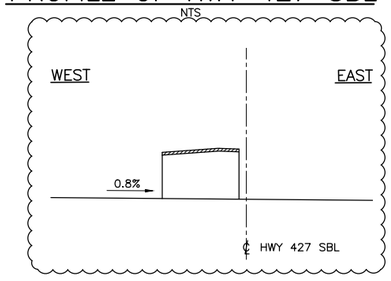
600	GENERAL ARRANGEMENT
601	BOREHOLE LOCATIONS AND SOIL STRATA
602	FOUNDATION LAYOUT
603	FOUNDATION DETAILS
603	NORTH ABUTMENT DETAILS AND REINFORCEMENT
604	SOUTH ABUTMENT DETAILS AND REINFORCEMENT
605	WINGWALLS
606	RETAINED SOIL SYSTEM WALL LAYOUT
607	PRESTRESSED NU GIRDERS AND BEARINGS (NU 1200)
608	PRESTRESSED NU GIRDER – DETAILS
609	DECK LAYOUT & SCREED ELEVATIONS
610	PRECAST DECK PANEL LAYOUT
611	PRECAST DECK PANELS FOR CONCRETE GIRDERS – DETAIL I
612	PRECAST DECK PANELS FOR CONCRETE GIRDERS – DETAIL II
613	DECK REINFORCEMENT
614	BARRIER WALL W/O RAILING, TL-5 (GFRP REBAR WITH ANCHOR HEAD)
615	6000 mm APPROACH SLABS
616	STANDARD AND MISCELLANEOUS DETAILS
617	ELECTRICAL EMBEDDED WORK
618	PILE DRIVING CONTROL

LIST OF ABBREVIATIONS:

WP	WORKING POINT
CIP	CAST IN PLACE
U/S	UNDER SIDE
P/C	PROFILE CONTROL
T/P	TOP OF PAVEMENT



PROFILE OF HWY 427 SBL



PROFILE OF STREET 'A'
NTS

GENERAL NOTES:

1. DESIGN STANDARDS AND CODES:
   - SCHEDULE 15-1 AND SCHEDULE 15-2: PROJECT AGREEMENT
   - DESIGN CODE: CAN/CSA-S6-14
   - MINISTRY OF TRANSPORTATION OF ONTARIO STRUCTURAL MANUAL
   - ONTARIO PROVINCIAL STANDARD SPECIFICATIONS (OPSS)
2. LIVE LOAD: CL-625-ONT.
3. CLASS OF CONCRETE

PRECAST GIRDERS	60 MPa (HPC)
PRECAST DECK PANELS	40 MPa
REMAINDER	30 MPa

4. CLEAR COVER TO REINFORCING STEEL

FOOTINGS	100 ± 25
DECK	
TOP	70 ± 20
BOTTOM	40 ± 10
REMAINDER UNLESS OTHERWISE NOTED	70 ± 20

5. REINFORCING STEEL

   REINFORCING STEEL SHALL BE GRADE 400W UNLESS OTHERWISE SPECIFIED.

   BAR MARKS WITH PREFIX 'S' DEONTE STAINLESS STEEL BARS.

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NOT FOR CONSTRUCTION
PROFESSIONAL ENGINEER LICENSED H. AZIMI 100166369 2020-02-28 PROVINCE OF ONTARIO

NOT FOR CONSTRUCTION
PROFESSIONAL ENGINEER LICENSED Q.LIU 100513507 2020-02-28 PROVINCE OF ONTARIO

CONSULTANT

DESIGNED	TOM GUIOT	T.G	20/02/28
DRAWN	KRYSTAL DEGEN	K.D	20/02/28
CHECKED	HOSSEIN AZIMI	H.O.A	20/02/28
APPROVED LEAD ENG.	TATIANA OJALA	T.O	20/02/28
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H427-D	H	7	STR	B14B	DWG	600	B

CAD FILE LOCATION AND NAME: C:\PROJECTWISE\WSP-CA\JENNIFER.MIEDEMA\DMS05264\H427-00-7-STR-B14B-DWG-600A.DWG
MODIFIED: 2/28/2020 1:08:05 PM BY: MIEDEMAJ
DATE PLOTTED: 2/28/2020 1:07:06 PM BY: MIEDEMA, JENNIFER